6.1 Portfolio Management Strategies

Policy Description and Objective

Summary

Some state public utility commissions (PUCs) require utilities to conduct portfolio management as a way to provide least-cost and stable electric service to customers over the long term. Portfolio management addresses other electric generation and transmission concerns, including reliability, safety, risk management, and environmental issues.

Portfolio management refers to the utility's energy resource planning and procurement strategies. These strategies, required by the state, cover both the generation of electricity and its transmission to customers. A successful portfolio management approach typically includes forecasting customer demand for electricity and resource supply, identifying and assessing a range of resource "portfolio" scenarios, and developing a plan for acquiring the preferred mix of resources.

An ideal portfolio is diversified; it provides many options to allow the utility to adapt to shifting market conditions, including:

- A variety of fuel sources such as coal, natural gas, nuclear power, and clean energy sources. Some states actively promote and sometimes require the use of clean energy sources for some of the electricity supplied to their customers.
- A variety of technologies for the generation and delivery of electricity.
- Programs that encourage customers to adopt energy efficiency measures.
- Financial incentive programs to encourage customers to reduce their consumption during peak demand periods.

Portfolio management refers to energy resource planning that incorporates a variety of energy resources, including supply-side (e.g., traditional and renewable energy sources) and demand-side (e.g., energy efficiency) options. The term "portfolio management" has emerged in recent years to describe resource planning and procurement in states that have restructured their electric industry. However, the approach can also include the more traditional integrated resource planning (IRP) approaches applied to regulated, vertically integrated utilities.

Portfolio management involves deliberately choosing among a variety of electricity products and contracts. The approach emphasizes diversity—diversity of fuels, diversity of technologies, and diversity of power supply contract durations. In its fullest form, energy efficiency and renewable generation are key strategy components.

Objective

States are requiring utilities to use portfolio management strategies to achieve a mix of resources that efficiently and reliably meet consumers' near- and long-term service needs in a manner that is consistent with environmental policy objectives. The most comprehensive portfolio management strategies consider demand- and supply-side resources and include clean energy as an important component of a diversified resource portfolio. Several states also consider rate structure issues and performance-based regulation to place energy efficiency and clean distributed generation (DG) on a level playing field with supply options (see Section 6.2, *Utility Incentives for Demand-Side Resources*).

Portfolio management strategies are used both in states where a regulated utility has an obligation to provide full service to customers and in "retail choice" states where the regulated entity's service might be restricted to distribution and default service.

Benefits

Portfolio management offers benefits through risk management and improved efficiency. Diversification is a key risk management strategy and can take the form of supply contract terms and conditions as well as supply from varied fuels, technologies, and a mix of generation resources. Additionally, diversification can result in a mix of transmission, demand-side resources, energy efficiency, and demand response. With diversification, each resource represents a relatively smaller proportion of the total electricity required to serve customers. This reduces price risks associated with a specific resource type, decreasing the possibility that customers will be exposed to a sudden increase in their electric rates.

Even though many portfolio management strategies are rooted in managing price risks for customers, environmental benefits flow naturally from portfolio management, particularly those strategies that ensure equal consideration of renewable generation and energy efficiency. For example, portfolio management delivers clean air benefits by shifting the focus of procurement from short-term, market-driven, fossil fuel-based prices to long-term, customer costs and customer bills by ensuring the consideration of energy efficiency and renewable generation resources. Portfolio management can also address additional benefits, including increased system reliability and reduced security risks.

Background

In the late 1980s and early 1990s, integrated resource planning (IRP) was common in the electric industry. With vertically integrated electric utilities responsible for generation, transmission, and distribution services for their customers, IRP was a useful tool for developing the most efficient resource portfolio. In 1992, 36 states had IRP requirements in place. After restructuring, the prevalence of ratepayer-funded energy efficiency programs declined significantly as the focus of resource planning shifted to short-term commitments. States either rescinded their IRP regulations or ceased requiring utilities to comply with them, in anticipation that customer choice would result in an optimal resource mix.

When customer choice did not deliver these benefits, some states and utilities began returning to IRP and portfolio management as a tool to ensure a variety of public policy goals, including clean, low-cost, reliable power. Having learned from previous experience, IRP policies today are more effective and vary greatly by state.

Some states are continuing to apply IRP regulations. Other states are requiring that a distribution company or other entity be responsible for acquiring a long-term, diverse resource portfolio to serve customers. In states served by regulated, vertically integrated utilities, portfolio management strategies are implemented through individual utilities' IRPs.

Some retail choice states, served by regulated distribution companies and competitive suppliers, are using portfolio management to stabilize and lower prices for default service consumers. To date, the primary focus of portfolio management in states with retail choice has been the management of costs and risks of supply contracts. Interested states that want to take a more expansive view of portfolio management are beginning to explore ways to incorporate clean energy into portfolio management.

States That Have Adopted Portfolio Management Strategies

Integrated Resource Planning

Several states currently have instituted IRP requirements, including California, Colorado, Hawaii, Idaho, Indiana, Minnesota, Oregon, and Washington. Many electric companies have developed detailed IRPs to guide their resource management and procurement practices in response to various state regulations. They include Avista Corporation, Idaho Power Corporation, PacifiCorp, Portland General Electric (PGE), Georgia Power Company, Duke Power, Xcel Energy, and Puget Sound Energy (PSE).

As vertically integrated facilities, these utilities own their generating assets. They use their IRPs to weigh the benefits of building their own generation plants against procuring energy from other entities. The plans also evaluate how best to balance peak versus

off-peak electric load requirements. In addition, they compare various supply- and demand-side options and contract and financial hedging options. Companies achieve these goals simultaneously by analyzing different scenarios. The IRPs detail fuel and electricity price information, customer demand forecasts, existing plant performance, other plant additions in the region, and legislative decisions.

Retail Choice Portfolio Management

As states have restructured the electric industry, they have struggled with the appropriate pace of transition from regulated full-service supply from integrated utilities to full retail choice in a competitive market. Originally, many states hoped that the majority of customers would select a competitive supplier. Many states also included provisions for default service, which would be procured through the regulated distribution company to supply customers who could not, or would not, find a supplier in the competitive market. These services were expected to provide a declining proportion of retail service.

Because the transition to competitive retail markets has been slower than anticipated, default services have taken on greater prominence as the main supply option for most customers with few competitive options. In fact, in restructured states, the majority of residential and small commercial customers continue to take electricity through their default service provider, despite the option to choose their supplier. This trend is expected to continue into the future, making the provision of default service an important element in meeting customers' service needs.

Consequently, to ensure least-cost and reliable supply for customers, several states have mandated portfolio management approaches for the provision of these noncompetitive services, as described in Table 6.1.1.

Some restructured states have adopted a particular aspect of portfolio management: laddering (or "dollar cost averaging") of generation contracts for default service procurement. This approach can offer greater price stability, supplier diversity, and flexibility to adapt to changing loads than a one-time procurement for the entire default service load.

Table 6.1.1: States That Use Diverse Contract Terms

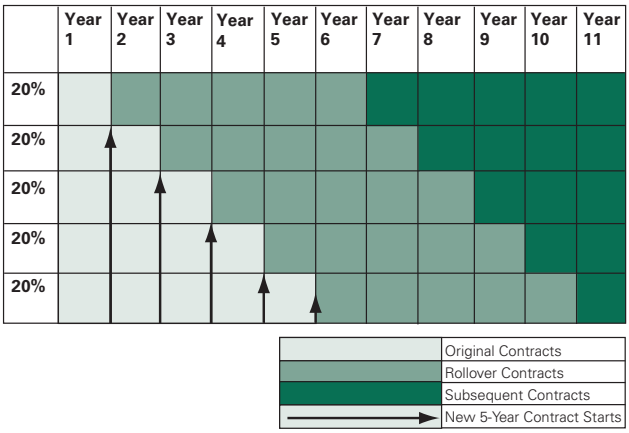
State	Procurement Rules for Default Service
Connecticut	Contracts are procured in overlapping pattern of fixed periods. The contracts must be for terms of not less than 6 months, unless shorter terms are justified.
Delaware	Delaware has proposed an approach similar to that used in New Jersey: a 3-year ladder of contracts.
Illinois	Illinois has proposed a mix of 1-, 3-, and 5-year contracts for its default service electric procurement.
Maryland	Utilities must attempt to obtain 1-, 2-, and 3-year contracts with 50% of load served through 1-year contracts.
New Jersey	There is a single annual auction date. Each year, 1/3 of the load is procured under fix-priced, 3- year contracts.
Washington, D.C.	Recommends that utilities' contract mix include contracts of at least 3 years for no less than 40% of the total load.

Source: Synapse 2005.

The objective of using such a laddered contract approach is that in each year only a fraction of the electric load is exposed to market price uncertainty. Figure 6.1.1 illustrates a basic five-year ladder. Utilities can also manage exposure to market price risk by executing a mix of contracts over short-, mid- and long-term contracts.

Additional tools beyond basic laddering might yield greater price and stability benefits for customers. For example, one enhancement that would promote clean energy would be a dedicated, renewable energy tranche. In other words, a portion of the load can be dedicated specifically to long-term renewable contracts. This would provide not only technology diversification, but also contract length diversification and more stable prices over the long run.

Figure 6.1.1: A Laddered Approach to Default Service Contracts Offers Flexibility and Price Stability



Source: Roschelle and Steinhurst 2004.

Non-State Jurisdictional Entities

While this section focuses on state policies pertaining to portfolio management, portfolio management strategies are a useful planning tool regardless of whether they are required by a state regulatory body or undertaken at the initiative of an individual company, municipal utility, or cooperative. They can be used in both private utilities and public power utilities. The strategies and approaches described in this section are applicable in a wide range of corporate structures and can be adapted to the circumstances of individual companies.

One of the most comprehensive portfolio management efforts takes place in the Pacific Northwest through the Northwest Power and Conservation Council. The Northwest Power and Conservation Council was created by Congress in 1980 as an interstate compact agency for the states of Idaho, Montana, Oregon, and Washington. The region is served by a federal power project (through the Bonneville Power Administration [BPA]), investor owned utilities (IOUs), municipal utilities, and power cooperatives.

The Northwest Power and Conservation Council periodically develops 20-year power plans to ensure an adequate, efficient, economical, and reliable power system and to address the impacts of the region's hydropower system on fish and wildlife. These power plans establish a regional context for the power planning of individual public and investor-owned utilities and provide information on the region's power system. Additionally, the plans offer broadly applicable resource strategies and methods to evaluate uncertainty and risk that can be used in individual companies' planning processes. The Northwest Power and Conservation Council's Fifth Plan is described in *State and Regional Examples*, on page 6-13.

The American Public Power Association (APPA) provides information for public power utilities regarding the inclusion of clean energy in energy portfolios. A 2004 APPA guidebook describes strategies other utilities have used to increase their percentage of renewable energy and provides a step-by-step process for considering renewable resources, especially wind and geothermal, in smaller public power system resource portfolios. Many publicly owned utilities develop IRPs. Examples of these include Seattle City Light, Tacoma Power, the Los Angeles Water and Power District, and the Sacramento Municipal Utility District.

Designing an Effective Portfolio Management Policy

State portfolio management policies, whether for vertically integrated utilities or distribution service providers, create a comprehensive planning and procurement process that levels the playing field for energy efficiency and clean energy supply. The regulated entity must then develop a plan for implementing the policy. This section describes the portfolio management process, including the planning process, participants, funding, timing and duration, and interaction with state practices.

Planning Process

Portfolio management typically involves a multi-step process of forecasting, resource identification, scenario analysis, and resource procurement, as described below.

Forecasting

A utility's first step in portfolio management is to forecast customer demand and resource supply over the planning horizon. Utilities include expected energy efficiency improvements outside of the utility's energy efficiency resources in their load forecasts. By forecasting demand and supply, a utility identifies the timing and magnitude of future resource needs.

Identifying Potential Resources

Next, the utility assesses the wide variety of supply and demand resources available to meet their identified needs. Supply-side resources include traditional sources such as power plants, purchasing from the wholesale spot market, purchasing short-term and long-term forward contracts, and purchasing derivatives to hedge against risk. Supply resources also include clean energy, such as renewable power. Demand-side resources can include energy efficiency programs and demand response. Utilities also assess expanding transmission and distribution facilities, and sometimes consider DG options.

Many states that require IRP establish criteria for evaluating resource options and a process for selecting resources. The criteria can include environmental, economic, reliability, security, and social factors and direct project costs. These factors create an evaluation framework that values the attributes of clean energy as part of the least-cost resource solution.

Recognizing Environmental Costs

Some states, such as California, require consideration of environmental factors as part of their planning process. California requires utilities to consider the cost of future carbon reduction regulations in their long-term planning by requiring a "cost adder" for supplies from fossil fuel plants. This means that for resource comparison purposes, utilities increase the cost of fossil fuel-based supplies to reflect the financial risk associated with the potential for future environmental regulation. This makes fossil fuel plants less attractive as compared to clean energy. Vermont law requires that utilities prepare a plan for providing energy services at the lowest present value life cycle costs, including environmental and economic costs.

Similarly, several utilities, including PacifiCorp, Idaho Power, PGE, Avista, and Xcel, incorporate an estimate of potential carbon emissions fees into their planning processes. For example, Montana requires utilities to consider environmental factors in portfolio management, but it does not require consideration of "environmental externalities." These "externalities," added to the cost of resources, can be used to incorporate estimates of sensitivity to risk associated with the environmental effects of plant emissions (e.g., acid rain, climate change, and other issues).

Creating the Preferred Resource Mix

After establishing evaluation criteria, states and utilities determine the mix of resources that will best meet the regulators' and companies' objectives. In this step, the state PUC directs regulated utilities to identify a mix of possible resources that meets forecasted requirements and addresses as many planning criteria as possible. For example, regulators and utilities might seek the lowest cost, most reliable options that minimize risk and reflect social, cultural, and environmental goals. During this step, utilities analyze the various scenarios and risks associated with different resource "portfolios."

California requires utilities to prioritize their resource acquisitions by incorporating a prioritized resources list established in the state's Energy Action Plan (EAP). Under this plan, also called the "Loading Order," top priority is given to energy efficiency and demand response, followed by renewable energy, then clean fossil-fueled DG, and finally, clean fossil-fueled central generation. Other states include explicit requirements for clean energy in their portfolio management policies. For example, Iowa and Minnesota require utilities to develop conservation or energy efficiency plans for their customers.

Montana mandates that utilities providing default service must consider demand- and supply-side resources when developing their portfolios.

Many states require utilities to conduct a competitive solicitation or other process to ensure that they evaluate options for meeting resource needs using predefined criteria in a fair manner. Oregon, California, and Montana are examples of states that have these types of competitive solicitation requirements.

Participants

States include a broad range of stakeholders as they develop policies and consider alternative scenarios. These stakeholders include state agencies, utilities, supply-side and demand-side resource providers, and customer representatives. For example, California, Connecticut, Oregon, Pennsylvania, Vermont, and Washington work with all interested parties to develop regulations on IRP or portfolio management for default service providers. Montana requires utilities that use portfolio management for default service to conduct a broad-based advisory committee review; make recommendations on technical, economic, and policy issues; and provide opportunities for public input.

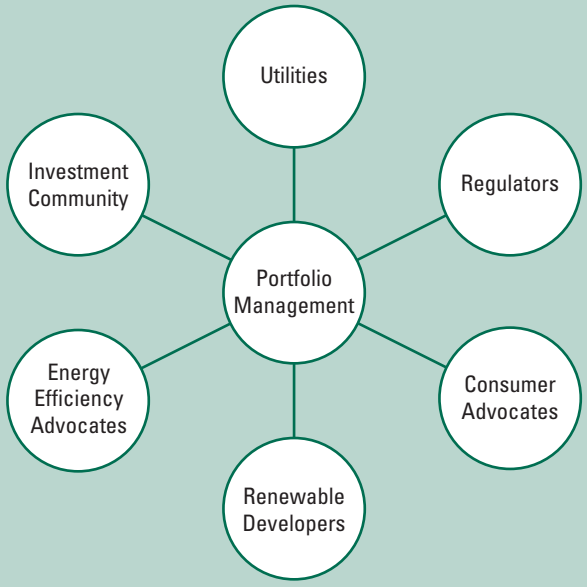
After a plan has been implemented, parties reconvene regularly (sometimes annually or more frequently) to see if their strategy should be adjusted for greater effectiveness in achieving policy and stakeholder objectives. For example, PacifiCorp, a utility that operates in five Western states, invites stakeholders to regularly take part in evaluating and implementing its IRP. The cornerstone of the public input is full-day public meetings, held approximately every six weeks throughout the year-long plan development period. Because of PacifiCorp's large service territory, these meetings are held in two locations and employ telephone and video conferencing technology. PacifiCorp has found that this approach encourages wide participation while minimizing participants' travel burdens and scheduling conflicts. Other companies, such as Idaho Power and PSE, similarly involve stakeholders and the public in the development of resource plans.

Funding

Vertically integrated utilities or distribution service providers bear the costs of resource planning and procurement, then pass the costs on to retail customers.

Best Practices: Participants

A wide variety of stakeholders can be included in the development of a portfolio management strategy, as shown in this example:



As discussed in Section 6.2, *Utility Incentives for Demand-Side Resources*, different regulatory policies create positive or negative incentives for regulated entities to pursue clean energy. Regulators can establish policies that provide utilities with the appropriate financial incentives to prepare and implement proper resource portfolios. These include incentives to:

- Design and implement cost-effective efficiency programs.

- Develop cost-effective DG options.
- Identify and implement the optimal mix of power plants and purchase contracts.
- Implement risk management techniques.
- Implement, update, and modify the resource plan over time to respond to changing market and industry conditions.

In some instances, cost recovery is not guaranteed, thereby creating an incentive for efficient and effective portfolio design and implementation. For example, in Iowa, the Iowa Utilities Board (IUB) can deny cost recovery when it is not satisfied with a utility's programs and budget.

Timing and Duration

Portfolio management approaches, both IRP and portfolio management for default service, usually incorporate regular planning and solicitation cycles—often ranging from one to five years. Many portfolio approaches include a long-range component (10–20 years) and a more short-term action plan (one to five years). Utilities can improve their portfolio management strategies by scheduling regular reviews and updates (perhaps annually) to accommodate new opportunities and energy use scenarios.

Interaction with State Policies

A variety of state programs and policies can be further leveraged by portfolio management strategies and can provide support to a state's portfolio management planning.

Renewable Portfolio Standard Policies

In the course of electric industry restructuring, many states adopted RPS, which require a given percentage of power from renewable power plants (see Section 5.1, *Renewable Portfolio Standards*). Some states, such as Connecticut and Massachusetts, have determined that default service supply must comply with RPS requirements just as competitive suppliers must comply. Recent legislation in Nevada allows a company to meet a portion of its RPS with energy efficiency programs.

RPS compliance can be a parallel process, not a constraint, to portfolio management, especially if RPS allows for renewable energy credits (RECs) to be used for procurement of electricity.

Energy Efficiency Programs

State agencies and legislatures can consider how energy efficiency programs will enhance the diversity and resilience of an energy resource portfolio. For vertically integrated utilities, energy efficiency has been a cornerstone of IRP for some time. However, default service suppliers are just now beginning to incorporate energy efficiency into their offerings. With restructuring, energy efficiency programs offer opportunities for lowering system-wide electricity costs and reducing customers' electricity bills. Energy efficiency also offers utilities the opportunity to reduce risk, improve reliability, mitigate peak demands, minimize environmental impacts, and promote economic development.

Even though utilities scaled back their energy efficiency programs during the 1990s, the primary rationale for implementing these programs—to reduce electricity costs and lower customer bills—is just as relevant in today's electricity industry. Consequently, energy efficiency can be a useful component in portfolio management, because it can (1) lower electricity costs and customers' bills, and (2) reduce the amount of generation needed from the market.

Some states have established a public benefits fund (PBF) to ensure that utilities acquire energy efficiency (see Section 4.2, *Public Benefits Funds for Energy Efficiency)*. In this case, all distribution companies collect a fixed charge from their customers to provide funding for energy efficiency activities. While PBFs help address some of the concerns that restructuring would reduce energy efficiency funding, they do not capture the full potential of cost-effective energy efficiency.

Consequently, some states ask utilities to use portfolio management to identify and implement additional energy efficiency. PSE in Washington includes energy efficiency based on a comprehensive assessment of technical potential. In its 2003 Integrated Resource Plan, the company identified resource needs that could be met with energy efficiency and followed up with an energy efficiency solicitation. During 2004, the company's electricity efficiency programs avoided about 20 megawatts (MW) of capacity need. For its 2005 Integrated Resource Plan, the company has taken a more targeted approach to energy efficiency, where competitive solicitation will focus on obtaining services for specific customer segments, end uses, or technologies rather than an open-ended solicitation.

In Minnesota, legislative mandates in 1982 and 1991 require utilities to develop conservation improvement programs (CIPs). Utilities include the CIP's energy saving goals in the IRPs, which are filed every two years with the PUC. Often, the utilities are required to complete an energy efficiency market potential study. In reviewing a company's IRP, the PUC sets 15-year demand-side management (DSM) goals for energy and capacity.

Energy Planning

Many states have undertaken comprehensive energy planning processes for the entire state (see Section 3.2, *State and Regional Energy Planning*). Portfolio management strategies are included in some states' energy planning processes and sometimes serve as a mechanism for implementing policy goals identified in the states' energy planning processes. For example, the forecasts developed by utilities in the course of the IRP process have been used to develop an electricity supply-and-demand forecast for the state as a whole. Once a state has established energy policy goals, such as the development of clean energy options, that policy goal can shape the implementation of portfolio management strategies. For example, states such as California that place a priority on certain clean resources require utilities to submit IRPs that are consistent with the overall state policy objectives.

Program Implementation and Evaluation

Portfolio management strategies have been effective when utilities, regulators, and other stakeholders are involved in the implementation process.

Regulators sometimes require utilities to submit portfolio management plans and progress reports at regular intervals. These plans and reports describe in detail

Best Practices: Developing and Adopting a Portfolio Management Policy

The best practices identified below will help states develop effective portfolio management policies. These best practices are based on the experiences of states that use portfolio management:

- Identify state policy goals for portfolio management, including reasonable power cost, stable supply, minimal environmental impacts, resource diversity, customer supply in immature markets, and risk minimization for customers and the utility.
- Identify the entity that will procure electricity resources—options include vertically integrated utilities, distribution utilities, and default service providers.
- Include a diverse representation of stakeholders in the development of the policy and process.
- Establish requirements for forecasting and determining resource needs.
- Determine the appropriate process for acquiring resources and comparing alternative resource options. Ensure that the goals of the process are clear, the process is transparent, the selection criteria are enunciated (including non-price factors), the supply and demand resources are considered, and there are mechanisms for fair procurement.
- Establish clear roles for utility and regulatory authorities (i.e., PUCs) in selecting evaluation criteria, reviewing proposals, and choosing final resources. Some states require an independent monitor to ensure a fair and trusted process.
- Consider finding a balance between the need for transparency and participation and the need for a manageable process.
- Require that all demand and supply resources be considered in meeting identified needs.

the assumptions used, the opportunities assessed, and the decisions made when developing resource portfolios. Regulators then carefully review these plans and either approve them or reject them and recommend changes needed for approval. California requires utilities to submit biennial IRPs and quarterly reports on their plans. Similarly, the IUB requires companies to submit annual reports on their energy efficiency and load management programs.

The Northwest Power and Conservation Council 2005 plan calls for monitoring key indicators that could affect the plan, such as loads and resources, conservation development, cost and availability of wind generation, and climate change science. The results of this monitoring would inform IRPs developed by the utilities in the Northwest Power and Conservation Council region.

Roles and Responsibilities of Implementing Organizations

The regulated entity (e.g., the utility or the default service provider) is responsible for implementing the portfolio management policy. This facility conducts the planning process and the resource solicitation process. It is also responsible for presenting the results of the portfolio management process in a policy forum as required by the state, usually a public proceeding before the state regulatory agency. The regulated entity is also responsible for contractual arrangements associated with any resources procured from a third party. While the regulated entity implements the policy, the state regulatory agency usually plays an oversight role, reviewing planning results and any procurement process.

Administering Body

State utility commissioners oversee utilities' and default service providers' procurement practices in their states. Typically, the commissions solicit comments and input as they develop portfolio management practices from a wide variety of stakeholders, including generation owners, default service providers, competitive suppliers, consumer advocates, renewable developers, environmental advocates, and energy efficiency advocates. The utility regulator may also play a role in reviewing and approving utilities' planning procedures, selection criteria, and/or their competition solicitation processes. PUCs in different states take different roles in the IRP process. For example, the California Public Utilities Commission (CPUC) has initiated a series of proceedings to design the IRP policy and to review and approve specific utility plans.

Best Practices: Implementing Policy/Programs

The best practices identified below will help utilities implement portfolio management requirements. These best practices are based on the experiences of states that use portfolio management.

- Establish a process that allows all interested parties to provide input and information.
- Prepare a clear, well-documented report that identifies available electricity or gas resources and resources that will be needed in the future.
- Identify all the resources available, both demand and supply, to help the utility meet its resource needs.
- Incorporate risk analyses into the plan to evaluate how different resource options address risks such as future environmental costs and other issues.
- Consider a wide variety of costs in long-term planning, including the societal costs of the environmental effects of power plants and the costs of complying with anticipated regulatory changes.
- Perform computer simulations of what happens when utilities integrate new resource alternatives with existing generation and transmission assets. Include existing demand-side resources.
- Determine an action plan for near-term needs. Identify when the utility may need to procure resources to meet its needs.
- For any competitive solicitation, establish clear requirements and a format for submitting proposals. These may differ for supply and demand resources. Evaluate potential resources according to predetermined criteria.
- Be prepared to consider technology-specific needs in the evaluation criteria; one size fits all may not necessarily be the appropriate approach.
- Identify difficulties with the process that require adjustments in the next forecast and solicitation process.

Evaluation

Portfolio management strategies can be evaluated at a number of levels. Policymakers, utilities, and stakeholders can evaluate the state policy on portfolio management or the utility-specific implementation of, and results from, the portfolio management strategy.

The state's policy on portfolio management can be reviewed in a regulatory proceeding to determine whether the overall policy is achieving stated public policy goals. This is usually spurred by the legislature or PUC.

Once a company has developed a resource plan, some states require a formal evaluation and approval. In other states, an integrated resource plan is filed and accepted without evidentiary review, and is only reviewed for form and completeness. In either case, the expectation is that subsequent utility resource acquisition and investment will conform with the plan unless there is sufficient justification for modification.

Some companies review the success of the plan and make adjustments according to evolving circumstances. For example, PacifiCorp uses an iterative process for updating its plan and ensuring that the plan is consistent with the company's business goals. In this case, the company's energy portfolios are analyzed based on how well they address PacifiCorp's energy supply and demand needs. In addition, the company looks at whether and how much the resources incur risk to utilities, default service providers, generators, and customers.

Utilities use a variety of techniques to quantify the uncertainties associated with a given portfolio and to evaluate the resilience and performance of a particular portfolio under different scenarios and future circumstances.

Evaluating Energy Efficiency Programs

While companies and regulators use a variety of tests to evaluate the cost-effectiveness of energy efficiency programs, many use the Total Resource Cost (TRC) Test as their main method for assessing their energy efficiency program offerings. The TRC Test incorporates the following benefits and costs:

- *Benefits* include avoided supply costs; a reduction in transmission, distribution, generation, and capacity costs; and a reduction in utility bills.
- *Costs* include program administration costs, the incremental costs to acquire and install an efficiency measure regardless of who pays for it, and the increase in supply costs for the periods in which load is increased.

The results of the TRC Test and other cost-effectiveness tests are typically expressed as a ratio of benefits to cost with more favorable programs achieving a benefit-cost ratio greater than or equal to one.[41] Individual measures can then be further screened based on the extent to which benefits exceed costs and other portfolio considerations such as those mentioned above.

Program administrators and their PUCs may require one or more tests to be used for screening the cost-effectiveness of individual measures and programs and whole portfolios. For example, California recently proposed adding the Program Administrator Test as a secondary screening measure to ensure that utilities do not provide excessive financial incentives to program participants (i.e., incentives in excess of incremental measure costs). Some of the most common tests include:

- The *Participant Test*, which takes into account benefits and costs from a participant's perspective.
- The *Rate Impact Measure (RIM) Test*, which takes into account what happens to a customer's bills or

[41] While utilities and PUCs most often express program performance in terms of benefit-cost ratios, it is also helpful to express program costs and benefits in terms of $/kilowatt-hour (kWh). Consumers and legislators can easily relate this metric to the cost of energy in their own area, while utilities and regulators can compare this value to the cost of other resources such as new generation. When expressed this way, the annual levelized TRC ($/kWh) captures the net program and customer costs divided by the projected lifetime savings of the measure or program. Demand-side resource costs can also be calculated in $/kilowatt (kW) to illustrate the value during periods of peak demand.

rates because of changes in revenues and operating costs caused by a program.

- The *Program Administrator Test*, which takes into account the benefits and costs from the program administrator's perspective.
- The *TRC Test*, which takes into account the combined benefits and costs from both the utility's and program participants' perspectives.
- The *Societal Test*, which is similar to the TRC Test, but includes the effects of other societal benefits and costs such as environmental impacts, water savings, and national security.

More information on the typical costs and benefits included in these tests can be found in the *Information Resources* section on page 6-20. States that choose to apply only one test are moving away from the RIM Test because it does not account for the interactive effect of reduced energy demand from efficiency investments on longer-term rates and customer bills. Iowa calls for using several tests in evaluating the cost-effectiveness of utilities' energy efficiency plans. In addition, the IUB conducts periodic regulatory proceedings to review utilities' proposed energy efficiency plans and how they are implemented.

In addition, one important consideration when evaluating energy efficiency and other demand-side resources in comparison with supply-side resources is recognizing the effect of a particular program or investment on the utility's demand curve. An energy efficiency program or other demand-side measure that reduces demand during peak pricing times will provide greater financial benefits than one that reduces demand in low-cost periods. Thus, a simple average of costs and savings across many hours may underestimate the value of a demand-side investment.

Best Practices: Evaluating Policy/Programs

The best practices identified below will help utilities evaluate portfolio management strategies. These best practices are based on the experiences of states that use portfolio management.

- Provide a state procedure for feedback about the policy and how it was implemented. This could include a periodic policy review, a review of written comments, or a review of comments provided within the context of the periodic portfolio management submissions.
- Establish a utility-based procedure for evaluating and obtaining feedback on how the policy was implemented. This could be a regular stakeholder process or other mechanism.
- Evaluate the outcome of each procurement cycle. Consider the appropriateness of the evaluation criteria, how easy it was to participate in the procurement process, perceptions of fairness, and whether the utility was successful in meeting its goals.
- Evaluate the cost-effectiveness of the energy efficiency resources procured as part of the portfolio management strategy. Use a variety of tests, including Societal Cost Tests and TRC Tests.

State and Regional Examples

Oregon

Investor-owned gas and electric utilities file individual least-cost plans or IRPs with the PUC every two years. The plans, required since 1989, cover a 20-year period. The primary goal is to acquire resources at the least cost to the utility and ratepayers in a manner consistent with the public interest. These plans are expected to provide a reasonable balance between least cost and risk. By filing these plans, the utilities hope that in future proceedings the PUC will not reject, and prevent utilities from recouping, some of the costs associated with resource acquisition.

One of the factors that Oregon utilities must consider is the uncertainty associated with certain choices. They consider risk factors such as price volatility, weather, and the costs of current and potential federal

regulations, including regulations that address carbon dioxide (CO_2) emission standards. Recently, the utilities have considered nonquantifiable issues that affect planning. These issues include potential changes in market structure, the establishment of RPS, changes in transmission operation and control, and the effect of PacifiCorp's multi-state process on regulation and cost-recovery. Environmental externalities (i.e., the environmental costs associated with different choices) are considered if they are quantifiable as actual or potential costs.

The state imposes different energy efficiency requirements for different utilities. Idaho Power is required to include energy efficiency. PacifiCorp and PGE are no longer required to evaluate energy efficiency as a resource in Oregon, but must include its impact on load forecasts.

In its 2004 integrated resource plan, PGE states that its recommended resource strategies include strong commitments to upgrading existing PGE power plants, encouraging energy efficiency measures, and acquiring newly developed renewable energy. As a result, approximately 50% of PGE's forecasted load growth between 2004 and 2007 is expected to come from sustainable measures instead of new resources that depend on additional fossil fuels (PGE 2004).

Web site:
http://www.portlandgeneral.com/about_pge/news/irp_opucAcknowledgement.asp?bhcp=1

California

In the beginning of 2003, CPUC ordered the three California utilities—San Diego Gas & Electric (SDG&E), Pacific Gas & Electric (PG&E), and Southern California Edison (SCE)—to resume the role of planning for and buying electricity to meet customer needs. This order followed a two-year period of testing customer choice in retail markets. In Decision 04-01-050, CPUC adopted the long-term regulatory framework under which utilities would plan for and procure energy resources and demand-side investments.

CPUC directed the utilities to prioritize their resource procurements and to follow the priorities, or "loading order," established in the state's EAP. The EAP identifies certain demand-side resources as preferred because California believes that they work toward optimizing energy conservation and resource efficiency while reducing per capita demand. The EAP also identifies certain preferred supply-side resources. The EAP established the following priority list:

1. Energy efficiency and demand response.
2. Renewable energy (including renewable DG).
3. Clean fossil-fueled DG and clean fossil-fueled central-station generation.

CPUC requires each utility to submit a 10-year procurement plan biennially, detailing its demand forecasts and showing how it plans to meet that demand. The plans must demonstrate that the utility has adequate, reliable supplies and complies with CPUC goals for efficiency and renewable energy. Utilities must file plans that include three scenarios—low load, medium load, and high load. To date, CPUC has approved long-term procurement plans for PG&E, SCE, and SDG&E.

The long-term procurement plan guides each utility's procurement activities. When the utility anticipates needing fossil fuel sources, it must initiate a competitive process designed to ensure that it compares renewable and fossil fuel energy sources. CPUC has directed the utilities to include the costs of CO_2 emissions in their long-term procurement plans and resource evaluation. Utilities must file monthly risk assessments and quarterly reports on the implementation of their plans.

Based on its first comprehensive review of the implementation of the loading order, California Energy Commission (CEC) staff found different success rates for different resources. For example, the state and its utilities are currently ahead of their goals for energy efficiency, but are having a harder time meeting their goals for demand response and renewables. The state continues to work on reducing barriers to DG and to take steps to meet the goals of the loading order policy (CEC 2005).

SCE's request to meet an anticipated energy shortfall during Summer 2005 with an additional $38 million in efficiency programs demonstrates that the utility is following the EAP's priorities.

Web site:
http://www.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/43224.doc

Iowa

Since 1990, the IUB has required Iowa's four investor-owned gas and electric utilities to develop and implement energy efficiency plans that provide opportunities for all customers to reduce electricity and natural gas demand, thereby reducing their bills. Although not part of a traditional IRP process, Iowa's program illustrates how well-designed portfolio management strategies support energy efficiency.

The IUB developed administrative rules for investor-owned utilities based on legislation enacted in 1990 and 1996. The state legislature played a key role in enacting this legislation. It initially requested direction from the IUB to help shape legislation and then through the legislation directed the IUB to establish energy efficiency and load management requirements.

The IUB and the Iowa Department of Natural Resources (DNR) develop capacity and energy savings performance standards for each utility, and each utility must propose a plan and budget for achieving those standards. In developing their plans, the utilities must perform studies that look at the potential of energy efficiency. The legislature directed the board to use several cost-effectiveness tests (i.e., a Societal Test, utility cost test, ratepayer impact test, and Participant Test) in evaluating the overall cost-effectiveness of plans. Each test evaluates the costs and benefits of the program from the perspective of a particular entity. The Societal Test takes into account the environmental effects of resource choices, requiring utilities to compare options by adding 10% to the cost of fossil fuel generation to account for its environmental effects.

In 2001, the IUB requested that each utility provide new energy efficiency plans. As a result, utility energy efficiency spending has increased to above the peak spending levels reached in the early 1990s, an amount that is equivalent to 2% of electric utility revenues and 1.5% of gas utility revenues. Iowa's electric and gas utilities are investing $80 million annually in energy efficiency and load management programs. These programs are saving 1,000 MW of electrical capacity per year (15% of summer peak demand) and more than 1 million megawatt-hours (MWh) per year. The plans, approved in 2003, are estimated to result in a net savings of $650 billion over five years (Iowa Department of Natural Resources 2004).

The IUB's energy efficiency planning rules include the following requirements:

- Utilities assess the potential for energy efficiency in each sector and submit an energy efficiency plan that identifies economically achievable programs and describes how the savings will be achieved.
- The IUB conducts case proceedings to review the plans. The proceedings involve a range of stakeholders, including the Office of Consumer Advocate, large industrial customers and environmental groups, and the Iowa DNR, which serves as the state energy office.
- The IUB establishes annual performance goals and budgets for each utility's DSM programs and reviews each utility's energy efficiency plan and budget.

In conjunction with utilities and stakeholders, the IUB developed an automatic cost recovery adjustment mechanism that allows utilities to recover the costs of DSM and load management programs. The IUB conducts a regulatory proceeding to evaluate the reasonableness of plan implementation and the budget. The IUB can deny cost recovery if not satisfied with the utility's implementation and expenditures.

The energy efficiency plans are incorporated into utility load forecasts, and utilities are required to estimate how energy efficiency helps them avoid acquiring new capacity or new resources.

Web site:
http://www.state.ia.us/dnr/energy/MAIN/PUBS/CEP/index.html

Vermont

Vermont's State Energy Policy places a strong emphasis on efficient resource use and environmentally sound practices in the provision of adequate, reliable, secure, and sustainable energy service. Legislation requires that each regulated electric and gas company prepare and implement a least-cost integrated resource plan for providing service to its Vermont customers. Under the law pertaining to IRP (30 V.S.A. § 218c. Least Cost Integrated Planning), utilities are required to prepare a plan for providing energy service at the lowest present value life cycle cost, including environmental and economic costs.

The state also prepares a statewide energy plan. The 2005 Vermont Electric Plan, the first update since 1994, contains detailed requirements for electric utilities' integrated resource plans. It also provides a decision framework for addressing uncertainties and multiple contingencies in energy resource selection. These requirements are intended to guide the utilities' planning processes to provide electric service at the lowest present value life cycle cost, including environmental and economic costs. The integrated resource plans should include a combination of supply and demand resources as well as transmission and distribution investments. The process outlined in the Electric Plan is also intended to facilitate information exchange among utilities, regulatory agencies, and the public.

Web site:
http://publicservice.vermont.gov/divisions/planning.html

Northwest Power and Conservation Council

The Northwest Power and Conservation Council was created by Congress in 1980 through the Pacific Northwest Electric Power Planning and Conservation Act. The Act requires The Northwest Power and Conservation Council to develop a 20-year power plan to assure the region of an adequate, efficient, economical, and reliable power system. The plan is updated every five years.

The Fifth Northwest Electric Power and Conservation Plan, issued in May 2005, is the most recent plan. The purpose of the plan is to develop plans and policies that enable the region to manage uncertainties that affect the power system and to mitigate risks associated with those uncertainties. The Fifth Plan contains recommended action items for the next five years as well as recommendations beyond five years to prepare the region for possible future scenarios.

The plan includes clean energy options as the primary options to reduce costs and mitigate risks. Clean energy options include energy conservation and efficiency (targeted at 700 MW between 2005 and 2009), demand response (targeted at 500 MW between 2005 and 2009), and wind (targeted at 1,100 MW between 2005 and 2014) from system benefits charges (SBCs) and utility integrated resource plans. To prepare for potential new resources in the future, the plan includes steps to secure sites and permits for expansion of wind resources and develop possible coal gasification facilities, conventional coal resources, and natural gas facilities. The plan also calls for monitoring key indicators that could affect the plan (such as loads and resources, conservation development, cost and availability of wind generation, and climate change science).

Web site:
http://www.nwcouncil.org/energy/powerplan/plan/Default.htm

PacifiCorp

PacifiCorp prepares an integrated resource plan for providing electricity to 1.6 million Pacific Power and Utah Power customers throughout Oregon, Washington, Idaho, Wyoming, California, and Utah. The company states that the integrated resource plan is not only a regulatory requirement but is also the primary driver in the company's business planning and resource procurement process.

The 2004 integrated resource plan determined that the most robust resource strategy relies on a diverse portfolio of resources that includes renewable energy, DSM, and natural gas and coal-fired generating resources. The plan identified a need for 2,700 MW of capacity by 2014, and emphasized the company's continuing intention of procuring 1,400 MW of wind capacity and demand-side resources (including energy efficiency). PacifiCorp is currently planning for the 2006 IRP cycle.

The integrated resource plan was developed with public involvement from customer interest groups, regulatory staff, regulators, and other stakeholders. It simulates the integration of new resource alternatives with the company's existing assets and compares their economic and operational performance. The method also accounts for future uncertainties by testing resource alternatives against measurable future risks. The integrated resource plan also looks at possible paradigm shifts in the industry; for example, it accounts for the uncertainty associated with future carbon regulations by increasing the cost of fossil fuel suppliers (for the purpose of comparing resources) by $8 per ton of CO_2 emitted by fossil fuel plants. The result is a flexible resource strategy centered on the least-cost, risk-weighted mix of resource options.

Web site:
http://www.pacificorp.com/Navigation/Navigation23807.html

Idaho Power

The Idaho PUC requires electric utilities to file an integrated resource plan every two years. The plan details the utility's 10-year plan for providing electricity to retail customers in Idaho and Oregon. In preparing its integrated resource plan for 2004, Idaho Power worked with an Integrated Resource Plan Advisory Council comprising PUC representatives, the Governor's office, state legislators, members of the environmental community, major industrial customers, irrigation representatives, and others. The 2004 integrated resource plan has two primary goals: (1) to identify resources to provide a reliable power supply for the 10-year planning period, and (2) to ensure that the resource portfolio balances cost, risk, and environmental impact. Two secondary goals of the integrated resource plan are to consider supply and demand resources in a balanced fashion and to provide meaningful public input in development of the integrated resource plan.

In developing its plan, Idaho Power analyzed 12 potential resource portfolios, five of which were selected for additional risk analysis. Based on the risk analysis, the preferred portfolio was a diversified one that included nearly equal amounts of renewable generation and conventional thermal generation. The preferred portfolio presented resource acquisition targets for resources including demand response, energy efficiency, wind, geothermal, combined heat and power (CHP), natural gas, and conventional coal, increasing the capacity of the system almost 940 MW over the planning period.

As a result of the 2004 integrated resource plan, Idaho Power intends to issue several requests for proposals (RFPs) before the next integrated resource plan for resources including wind, geothermal, and peaking combustion turbines. The company will also undertake activities relative to demand-side measures and energy efficiency.

Idaho Power has also designed a risk management policy that addresses the short-term resource decisions required in response to changes in load, resources, weather, and market conditions. The risk management policy typically covers an 18-month period and is intended to supplement the long-term IRP process.

Web site:
http://www.idahopower.com/pdfs/energycenter/irp/2004_IRP_final.pdf

Puget Sound Energy

PSE prepares a Least Cost Plan every two years in response to state regulatory requirements. The plan details how the company plans to provide electricity to retail customers in 11 counties in Washington. The company held numerous formal and informal meetings, providing opportunity for public input to the plan.

PSE's 2005 Least Cost Plan identifies plans for acquiring energy efficiency and renewable resources in the near- and long-term, as well as some conventional fossil generation in the long-term. In developing the plan, PSE used scenarios to evaluate risks and portfolio performance associated with certain potential futures.

Web site:
https://www.pse.com/about/supply/resourceplanning.html

Clean Energy Requirements in Retail Choice States

Connecticut

Connecticut is an example of a retail choice state with a clear, multifaceted clean energy approach. The state requires all generators that provide transitional offer service (Connecticut's standard offer service) to customers to comply with the state's RPS. In addition to the RPS, Connecticut requires its transitional offer service providers to sign contracts for renewable energy totaling 100 MW. Separate from the RPS requirements, Connecticut offers its transitional service customers the option of choosing from one of two clean energy programs. Under either program, customers can pay a premium and purchase either 50% or 100% of their resources through clean energy. Finally, competitive generators that serve Connecticut customers outside of the transitional offer service must also comply with the state's RPS.

Web site:
http://www.ctcleanenergy.com

Pennsylvania

Pennsylvania has taken a different approach to increasing use of clean energy. The state created four funds as a result of restructuring plans. These funds are designed to promote the development of sustainable and renewable energy programs and clean-air technologies on both a regional and statewide basis. The funds have provided more than $20 million in loans and $1.8 million in grants to more than 100 projects. In addition, 20% of standard offer customers are assigned to suppliers that are required to use at least 5% renewable generation.

Web site:
http://www.puc.state.pa.us/utilitychoice/electricity/green_clean.aspx

Montana

Montana established electric least-cost planning rules and policy guidelines that apply to default supply utilities for long-term electric supply resource planning and procurement. Under the "traditional" planning process, the affected utility is required to submit an integrated resource plan every two years. The state also has a "restructured" planning process for one distribution company, where the utility must file a portfolio action plan every year. In both the traditional and restructured processes, the utility must file a long-range plan that includes demand-side resources and supply-side resources. However, the traditional plan must reflect the "least societal cost" and include estimates of the environmental costs of certain options. The restructured plan does not include these factors.

The guidelines for default service state that the objective of the planning process is to assemble and maintain a balanced, environmentally responsible portfolio of power supply and demand-management resources. Both planning processes require utilities to consider the costs of complying with existing and potential environmental regulations.

Nevada

Nevada's 1997 restructuring legislation established an RPS requiring utilities to obtain a minimum percentage of the total electricity they sell from renewable energy resources. The RPS percentages were increased in 2001 and again in 2005. The 2005 revision contained in Assembly Bill 03 (A.B.3) not only increased the required

percentage, but also allowed utilities to meet the standard through energy savings from efficiency measures and renewable energy generation (or credits). Energy efficiency can be used to meet up to one-quarter of the standard in a given year. The 2005 legislation sets new requirements for the total amount of electricity that utilities sell from renewable energy resources at 6% in 2005, rising to 20% in 2015. The PUC must write regulations to implement the legislation.

Web site:
http://leg.state.nv.us/22ndSpecial/bills/AB/AB3_EN.pdf

On the Horizon

Clean energy requirements for default service providers are a relatively new concept that states are exploring. For example, in Illinois, the governor organized a sustainable energy plan initiative with the goal of developing RPS, demand response, and energy efficiency programs. The initiative includes input from utilities, consumer groups, large industrial customers, government agencies, and other industry participants. The Illinois Commerce Commission gathered this input to develop an overall clean energy implementation plan for the state, including voluntary renewable and energy efficiency portfolio standards for public utilities and alternative electricity providers. States are likely to continue to expand these approaches as they seek to ensure that customers are served with portfolios that minimize risks, provide stable prices, and reduce long-term costs. States that are interested in expanding the use of portfolio management in resource procurement may wish to pursue policy approaches that incorporate renewables and energy efficiency into energy service supply in restructured states.

What States Can Do

Many states have found that portfolio management strategies offer a useful and effective tool for implementing their clean energy policy goals. These strategies emphasize the development of a portfolio of resources that are resilient under a wide variety of possible future scenarios and that achieve a wide variety of benefits. States can tailor their portfolio management strategies to meet their specific clean energy objectives.

Action Steps for States

States that already have a portfolio management policy or program can:

- Link their portfolio management policy to other state policies, such as RPS, energy efficiency, and energy planning policies.
- Review the portfolio management policy regularly and adjust the portfolio as appropriate.
- Assess transmission policies and how they influence generation. Decisions regarding the maintenance or enhancement of transmission and distribution (T&D) facilities will have important consequences for the development of generation and efficiency resources and vice versa. Portfolio managers can consider not only the generation resources that are available with the existing transmission system, but also those that could be tapped via new or upgraded transmission. Conversely, portfolio managers can also consider whether costly T&D upgrades and enhancements can be deferred or avoided. This involves considering the strategic placement of power plants, energy efficiency investments, or DG technologies.

States that do not have a portfolio management policy or program can:

- Educate stakeholders about the benefits of portfolio management, including more stable prices, risk mitigation, lower long-term costs, and a cleaner environment.
- Review other state practices and current utility portfolio management practices.
- Develop a comprehensive policy with clear provisions for program review and modification.

When modifying or adopting portfolio management requirements, states are moving towards policies and programs that strive to minimize total revenue requirements (i.e., total bills paid by customers) rather than electricity rates.

Information Resources

Information About States

State	Title/Description	URL Address
California	Decision 0412048—opinion adopting PG&E, SCE, and SDG&E's long-term procurement plans.	http://www.cpuc.ca.gov/WORD_PDF/FINAL_DECISION/43224.doc Other decisions at: http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/43479.htm
	CPUC interim decision on administrative structure for energy efficiency program delivery, designating IOUs for the lead role in program choice and portfolio management.	http://www.cpuc.ca.gov/PUBLISHED/FINAL_DECISION/43628.htm
Connecticut	An example of a state's comprehensive approach to clean energy.	http://www.ctcleanenergy.com
Illinois	Sustainable energy plan initiative to develop an RPS, demand response, and energy efficiency.	http://www.icc.illinois.gov/en/ecenergy.aspx
Iowa	2004 Energy Plan Update.	http://www.state.ia.us/dnr/energy/MAIN/PUBS/CEP/index.html
	2005 Iowa Code: energy efficiency program requirements at Chapter 476.6 (14), and Chapter 467.6(16)–(18).	http://www.legis.state.ia.us/IowaLaw.html
Maine	Another example of how a restructured state thinks about clean energy.	http://www.maine.gov/mpuc/consumer/industry/electricity/index.html
Nevada	A.B.3, June 2005, increasing the RPS and allowing up to one-quarter of the required percentage to be met through energy efficiency measures.	http://leg.state.nv.us/22ndSpecial/bills/AB/AB3_EN.pdf
New Jersey	A detailed description of New Jersey's auction approach to default service.	http://www.bgs-auction.com
Oregon	A brief description of Portland General Electric's 2002 Integrated Resource Plan.	http://www.portlandgeneral.com/about_pge/news/irp_opucAcknowledgement.asp?bhcp=1
Pennsylvania	Information about how the PUC is helping to promote and encourage renewable energy development in Pennsylvania, and a link to the Office of Consumer Advocate's Web site where consumers can find out more information about choosing a "green supplier." Consumers also can find information about air pollution from power plants, fuel sources, and RPS.	http://www.puc.state.pa.us/utilitychoice/electricity/green_clean.aspx
Vermont	Vermont Department of Public Service, 2005 Vermont Electric Plan.	http://publicservice.vermont.gov/divisions/planning.html

State	Title/Description	URL Address
Washington	2005 Biennial Energy Report discusses IRP in the Pacific Northwest.	http://www.cted.wa.gov/_CTED/documents/ID_1872_Publications.pdf
Northwest	Northwest Power and Conservation Council issued its Fifth Northwest Electric Power and Conservation Plan in May 2005. The purpose of the plan is to develop plans and policies that enable the region to manage uncertainties that affect the power system and to mitigate risks associated with those uncertainties.	http://www.nwcouncil.org/energy/powerplan/plan/Default.htm
All States	The Regulatory Assistance Project (RAP) has a survey of some states' IRP practices and discussions of portfolio management that can be found in their subject menu.	http://www.raponline.org

Information About Companies

Title/Description	URL Address
Idaho Power Corporation's IRP	http://www.idahopower.com/energycenter/2004irp.htm
PacifiCorp's IRP	http://www.pacificorp.com/Navigation/Navigation23807.html
PSE's IRP	http://www.pse.com/about/supply/resourceplanning.html

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Joint Statement of Natural Resources Defense Council (NRDC) and Edison Electric Institute on portfolio management.	http://naruc.org/associations/1773/files/eei_nrdc.pdf
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